REVIEWS.

LES MALADIES DU SOLDAT. ETUDE ÉTIOLOGIQUE, ÉPIDÉMIOLOGIQUE, CLINIQUE ET PROPHYLACTIQUE. Par A. MARVAUD. Paris: Félix Alcan, éditeur, 1894.

THE DISEASES OF THE SOLDIER. By A. MARVAUD.

THIS work is worthy of more than a passing note, inasmuch as it is the first attempt at a systematic presentation of the diseases that prevail among soldiers in garrison in times of peace. Many important works have been published on the diseases that are prone to affect armies in active campaign, and many valuable articles have appeared on individual diseases as seen in the routine practice of military medicine in garrisons; but until now we have had no volume claiming to be a systematic treatise on the diseases of the soldier. Additional importance is given to this work by its semi-official character. Its author is entitled to speak *ex cathedrâ* as professor of military medicine in the Val de Grâce Medical School, and his statistics of disease and death are drawn from the official records of the Department of War. His matter is arranged under five heads: 1. The medical statistics of the French army and their comparison with the rates of other European services, and as far as possible with those of the civil population. 2. Infectious diseases. 3. General diseases, non-infectious. 4. Local diseases. 5. Diseases accidentally present, such as alcoholism and venereal diseases.

The attention of our army medical officers would probably be attracted by the statistics of this work rather than by the pathogeny, clinical characters, and prophylaxis which it presents, for the statistical data suggest comparisons at every turn, while the discussion of the other points is interesting only when illustrated by some army medical record. Yet these statistics are rarely susceptible of direct comparison with those of our army, on account of their failure to embody the lighter cases of disease. Sick men in the French military service are treated in quarters, in regimental hospitals, and in general hospitals; but the men treated in quarters are not taken up in the published record of sickness. The mean annual sick-rate of the French army is from 400 to 600, treated in hospitals, per thousand of effective; *our* annual rate is about 1300. Hence, according to the records, we have a morbility more than double that of the French army. Last year our rate was 1270, but this included every man who was excused from even a part of his military duty on account of sickness. Incidentally, we learn that in 1889 the number of men excused from duty in the French army was 1375 per thousand of strength, so that if the lighter cases treated in quarters became with them as with us a matter of record, our sick-rate would bear favorable comparison with that of the French troops.

During the period 1862–90 the mortality rate of the French army on home service fell from 9 to 6 per thousand of strength present. The rate of the German army is 3.9. In making this comparison our author is not slow to point out that a death-rate may be kept low by discharging from service on account of disability those whose cases will probably have a fatal ending, and that the death-rate should never be considered *per se*, but always in connection with its complement—the rate of discharge for sickness. Thus regarded, the annual loss of the French is 27 per thousand men, deaths 6, discharges 21, and of the German army 32.9, deaths 3.9, discharges 29. Incidentally, we may remark that in the United States army last year we had a loss of 24.79, deaths 6.44, discharges 18.35. This last statistical item is not gathered from Professor Marvaud's work, but from the Annual Report of the Surgeon General of the United States Army. When we remember that the French have a home-service army of 500,000 men, and that 110 of their military posts are garrisoned each by more than 10,000 men, we can easily understand why the statistics of the United States army of 25,000 men make no figure in the Professor's volume.

In discussing etiology, clinical features, etc., too much space, we consider, has been given to the theories and opinions of previous writers, mostly French authors, on the subject under discussion. Too much space is given also to the development of views that belong to the realm of general medicine, and concerning which the reader, whether a young military surgeon or a civilian confrère, should have been credited with as full a knowledge as may be gathered from our author's pages. Nevertheless the work presents many points of interest, some of which are indicated in the following paragraphs.

Typhoid fever is represented as the most frequent and important of the infectious diseases that prevail in the French army. There is, however, no certainty as to the extent of its prevalence. Prior to 1888 typhoid fever and continued fever were reported separately—about 10 cases annually of the former per thousand of strength, and 20 of the latter. In that year, owing to a growing belief at headquarters in the identity of the morbific action in these cases, the term continued fever was expunged from the record; but the regimental medical officers do not appear to have accepted the doctrine implied in the change, for instead of an increase to 30 per thousand in the typhoid rate, this rate remained at from 10 to 13, while a large increase took place in the diseases reported as "other general diseases." As the deaths from typhoid fever can be identified, the rate of 3 per thousand of strength may be accepted as accurate; but with only 10 cases per thousand, the rate of fatality of the disease is manifestly excessive. Marvaud considers that if all the light cases formerly reported as continued fever and now as other general diseases were reported as typhoid, the disease would be about 16 per cent. fatal. Fatal cases are of more frequent occurrence in Africa than at the home stations, the annual death-rate in the latter being 1.8 per thousand; and as the statistics of the Minister of the Interior show a death-rate from this disease of only 0.72 among young men of the military age in civil life, the soldier is considered to run a correspondingly high risk. As a rule, the mortality is greater the larger the aggregation of men in garrison, military posts of over 10,000 men having larger rates than those of smaller effective; nor can these differences be ascribed to climate or altitude or medical topography. In fact our author concludes that there are no soils favorable or unfavorable to the development of typhoid fever; but he considers that season has much to do with its prevalence, as its curve rises to a maximum in October in Algeria and Tunis as in France, and the curve of mortality follows the same course. In some localized epidemics the typhoid sick-rate has been as high as 100 per thousand, as at Nancy in 1875; at Satory, 180; at Brest, 250; and at Dinan, in 1889, 600 per thousand. When an epidemic is localized in a small garrison the mortality is sometimes high, whereas when a large garrison is affected only certain of the barracks become infected, and in comparing the number of attacks and deaths with the total military population the gravity appears less on account of the large number of individuals belonging to that population.

It is noted also that in some localities where typhoid fever is endemic there are barracks that are notorious for always being more affected than others. This is attributed to a morbific influence inherent in the barracks, or to pathogenic conditions in the quarter of the town in which it is situated, as at Paris, Lyons, and Nancy. At other times, notwithstanding the most careful research, nothing is discovered to account for the presence of the disease in a limited part of a garrison, as in 1890, in the third squadron of the Fifth Cuirassiers, while the other squadrons of the regiment, and other regiments quartered in the vicinity, all under the same hygienic conditions, were free from the disease. Importation by troops from an infected locality has, of course, been frequently observed.

Baudin considered paludal and typhoid fevers as antagonistic, and that there could, therefore, be few cases of the latter in Africa. In view of this doctrine all low fevers occurring in Algeria were for many years called malarial remittents. L. Laveran was the first to recognize the presence of typhoid fever among these cases; and now this fever is acknowledged to be the most common and deadly of the Algerian diseases.

In 1877 Colin attributed the occurrence of typhoid fever to a number of insanitary conditions, and particularly to non-specific miasms. He considered the part played by water in its propagation as a secondary one, consisting simply in the production of a determination of the morbid cause toward the intestinal canal. Shortly after this publication, however, the medical officers of the French army had their attention directed to the water-supply by some notable occurrences. An epidemic in the garrison of Arnane ceased when certain wells became dry, and eight days after a return to the use of the well-water, replenished meanwhile by rains, cases of fever began again to appear. Not long thereafter the discovery of the Eberth-Gaffky bacillus gave to water its present prominent place as a propagator of typhoid fever. The development of the fever from the bacillus coli communis by its transformation into a variety of that of Eberth is also suggested. Of seventy epidemics reported as having occurred during the period 1883–89, thirty-nine were regarded as due to the ingestion of contaminated water. It was therefore decided to introduce the Chamberland filter where the water was of doubtful quality. This has been followed by a marked diminution in the prevalence of the fever; 6881 cases were reported in 1887, 4412 in 1889, 3491 in 1890, and 3225 in 1891. Although the part taken by water in the propagation of typhoid fever has thus officially and beneficially been recognized, army experience is regarded as giving full warrant to assigning a certain part in causation to soil, air, and even to contagion. The influences which augment the receptivity of the soldier as regards this fever are discussed under the headings: age, exposure of young countrymen to urban insanitary influences, overcrowding, and exhaustion.

The author diagnosticates his typho-malarial cases by a thermometric record taken every two hours, which he claims shows a double febrile action culminating in the morning for the paludal poison and in the evening for the typhoid factor. To sum up his views on this subject he cites Gancel in terms somewhat as follows: 1. Paludism may be associated with typhoid fever. In certain cases it precedes the dothienenteritis; in others it appears simultaneously or becomes revealed in the course of the malady; at other times again it is declared only during the period of convalescence. 2. From this morbid association a special malady results, having its clinical and thermal characters varying with the proportion in which its two pathogenic factors occur in the case. 3. In the absence of regular or pernicious accessions the malarial influence is revealed by an alteration of the thermic type of the enteric fever and explains the hybrid and atypical forms of this affection. 4. The mixed nature of the typho-malarial fever is proved by its symptoms and pathological anatomy. This is the view of typho-malarial fever which we in the United States have taken since the analysis of the typho-malarial cases of the Civil War; and happily the ambiguous term itself has now nearly died out. A malarial remittent is with us a malarial remittent, although it may be adynamic in type, and a case of typhoid fever is reported as such, although it may be complicated with malarial manifestations.

Greater importance is attached by Professor Marvaud to the hygienic than to the medical treatment of typhoid fever. These febrile cases are treated usually in the largest and best-ventilated wards, and each patient has two beds side by side, a provision which prevents overcrowding and facilitates the employment of applications to the person. The strength is supported by beef-tea, milk, café alcoolisé, and generous wines; refreshing drinks, chiefly lemonade, are found to allay the distressing thirst and to promote the elimination of toxic principles (leucomaines) by diuresis; acid gargles are also employed and compresses wrung out of cold water and frequently changed are applied to the abdomen to promote intestinal contraction and prevent the retention of gaseous and fecal matters. Refrigerant and sedative lotions are used for the reduction of temperature and to allay disturbance of the nervous system. When the axillary temperature passes 39° C. (102.2° F.) sponging with carbolized vinegar as often as six times a day lowers the temperature from 0.5° to 1.5° C., allays nocturnal agitation and delirium, and promotes the cutaneous functions. These spongings are considered much preferable to baths. In the way of medication are given laxatives and purgatives in constipation, bismuth and opium in diarrhœa, when one or other of these conditions occasion danger by its persistence; for thoracic complications revulsives, as tincture of iodine and blisters, with expectorants as tolu; for nervous agitation and insomnia chloral and bromide of potassium. Quinine has been disused as unsatisfactory, for while influencing the fever but slightly, it aggravated the nervous symptoms, increasing headache, stupor, and adyamia, favoring collapse, compromising the case, and retarding convalescence. The internal administration of antiseptics was also discarded, as, notwithstanding all efforts in this direction, none has been discovered that is capable of arresting or moderating in the living tissues the pathogenic power of the infectious element. Prophylaxis may be inferred from what has already been said of the etiology of the disease. The abandonment of an infected camp or barrack has become classic in military prophylaxy, as it arrests the progress of the local infection, preserves individuals who have not yet become invaded by the typhogenic germs, and permits of the necessary disinfection of the quarters.

Pulmonary consumption takes second place in importance. The death-rate from this disease is greater among old than among young soldiers; but our author claims that we would be wrong in attributing this to a harmful influence exercised on the constitution of the men by the fatigues and exigencies of military life. It is due to the fact that young consumptives are discharged from the army, but old soldiers who become affected dislike to be returned to civil life and are permitted to remain and die in the military hospitals. The mean number of cases originating in the army is four per thousand of strength, of which one is fatal in the service and three are discharged. The death-rate from phthisis is greater in the army by 150 per cent. than in the civil population of corresponding sex and age. The disease is prone to attack soldiers in their first year of service, comporting itself in this respect like all the other infectious and specific diseases. The proportion of consumptives in the army varies with the arm of the service—greatest in the infantry and least in the zouaves. The principal influence which makes itself felt in the partition of consumption among the various arms depends on the requirements for enlistment and the care exercised in the selection of the men. The experience of Professor Marvaud confirms the observations of many authors cited as to the existence of an antagonism between consumption and typhoid fever. Of the many autopsies he has made during typhoid epidemics in garrison he has never observed tubercles in the lungs or other organs, and has never seen a consumptive contract typhoid fever even when treated in a ward with typhoid cases. But he cannot similarly confirm Boudin's doctrine of antagonism to paludism.

Prophylaxis consists of: 1. The immediate discharge from service of all men affected with tuberculosis or likely to become so, such as those having weakly constitutions, vicious conformation of the chest, insufficient respiratory capacity, or hereditary tendencies. 2. The discharge as promptly as possible of all who become affected during service. 3. Preventive hygienic measures; location of barracks away from towns and on elevated and well-ventilated sites; thorough ventilation of squad-rooms, and day-rooms for the use of the soldiers in inclement weather; antiseptics in spittoons and paraffined floors to prevent soiling with sputa; the disuse for a certain period of any squad room in which cases have been developed; isolation wards; disinfection; attention to diet; the avoidance of sudden transitions from heat to cold; and the use of such exercises in the open air as tend to expand the chest.

Vaccination has been in use in the French army since 1831, and re-vaccination since 1857. In 1866 an effort was made to substitute animal virus for the arm-to arm method, up to that time in use, but the experimental results were unsatisfactory, and it was not until 1889 that animal vaccine received official recognition. The army now raises its own supply of animal vaccine.

The chapter on cerebro-spinal meningitis is unsatisfactory save as to its statistics. Etiology unknown, prophylaxis correspondingly uncertain, and treatment unhappily but little efficacious.

Diphtheria is the only specific febrile and infectious disease that has been increasing in prevalence of late years in the army. Its occurrence as a complication of other maladies is accounted for by the existence in the mouths of persons who have never had diphtheria and who have not been in contact with diphtheritic cases of a bacillus, Löffler's pseudo-diphtheriticus, which would be harmless in a healthy organism, but which assumes pathogenic properties when the individual comes under the influence of pathological conditions. Little is said of differentiating these cases from other forms of sore-throat. Detersive applications are recommended, as of borax, chlorate of potash, nitrate of silver, lemon-juice, tincture of iodine, and perchloride of iron.

Jaundice is the next subject discussed—not the jaundice due to retention of bile, as from calculi, tumors, gastro-duodenitis, etc., nor that resulting from alterations in the hepatic parenchyma attributed to compression of the biliary ducts by the congested vessels, nor those cases due to alterations in the blood by the infectious agents of malarial and typhoid fevers, etc.; but a general disease of an infectious nature, the invariable lesion of which is acute yellow atrophy. No light is thrown on the obscurity of this disease.

As goitre occurs among soldiers only when stationed in localities where it is endemic, the disease is attributed to influences common to the soldier and the civil population. The infectious cause is assumed to be of a microbic nature and propagated in the water-supply.

The regulations of the French army in regard to the management of cases of glanders are cited in full. The proportion of deaths from bites of rabid animals is said to have fall from 16 to 0.25 per cent. since 1886, when facilities were provided at the Val de Grâce Hospital for special treatment by Pasteur's method.

Paludism and diarrhœa and dysentery are discussed as infectious diseases prevalent in Algeria and Tunis. If our author gives expression to the views held generally by the French army medical officers, we must regard these officers as seriously at fault in respect to the propagation of malarial diseases. The opinions of Colin, last published formally in 1872, to the effect that the malarial germ enters the system by the pulmonary tract, and that it is doubtful whether the absorption of this germ can be effected by the digestive system when introduced by the drinking-water, are cited as current doctrine, although medical experience in those parts of this country and India where malarial diseases are most prevalent, has established a firm belief in their propagation by water-supplies, and practical sanitarians operating on this line have given a new reputation to localities formerly notorious for their insalubrity.

Two views are given of the causation of dysentery: that of Colin, which regards the disease as a simple inflammation of the large intestine produced by food or water of bad quality, by foul emanations, or by chilling of the surface; and that of Kelsch, which attributes it to a specific microbe. The latter view is approved by Professor Marvaud on account of the discovery of a special microbe in the stools by Chantemesse and Widal, and in consideration of instances of its importation into barracks in good sanitary condition, of its development in hospitals from the presence of affected persons, and of its propagation to the civil populations of cities and towns from contact with an affected army.

Our author's conclusions as to la grippe are those of Antony, published in 1890. The contagious character of the pandemic is proved by the coincidence of its appearance in a locality with the arrival of someone from an infected place, by the immunity of isolated persons, and by the special incidence of the disease on the men of the hospital corps as compared with those serving in other corps. The results of the study of the recent pandemic do not seem to have been before Professor Marvaud when his chapter on this disease was written.

As to cholera, we are surprised to find that the regulations in force in the French army are those of July 20, 1883, *i. e.*, of a date prior to the discovery of the cholera spirillum. The French authorities have not as yet given the bacillus of the distinguished German bacteriologist an official recognition.

Rheumatism is the only one of the other general maladies that is considered of special interest to the army medical officer, but we find in its discussion little of interest. Of 600 cases 20 have cardiac complications, necessitating discharge.

Local diseases are arranged under the headings of the various organic systems. Pneumonia is included among those of the respiratory system; but our author recognizes the specific and microbic character of the disease as developed by Jürgensen, Klebs, Eberth, Koch, Talamon, Fränkel, and Netter. Much of the heart disease among French troops is considered due to the rapidity and consequent want of care with which the examination of conscripts is made. Nostalgia is said to have disappeared from the army since the term of service was reduced to three years and special measures taken to provide recreation for the men in garrison. Skin diseases have the high rate of twenty-four per thousand of strength, and three or four of these are cases of scabies. Most of the cases of disease of the ear are said to have originated before enlistment. Cases are noted of otitis media from the introduction of cold water into the ear during bathing, as also cases of deafness from inspissated cerumen.

Venereal diseases have undergone a considerable diminution in their prevalence of late years. During 1862–69 the rate per thousand of strength was 106; 1872–79, 74; in 1880–88, 55; and in 1889–90, 45. These statistics, says our author, tend to place the army on the same line as the troops of Austro-Hungary and Prussia, which are in Europe those least affected with these diseases. He refers to the propagation of syphilis during the operation for tattooing from the use of a needle infected either by the saliva of the operator or by the blood of one who had been operated on previously. No special measure is in force for the suppression of venereal diseases; but the army is benefited by the sanitary police rules relating to the examination of prostitutes and the repression of clandestine prostitution applied in garrison towns for the prevention of the spread of the disease in the civil population. At one time a month's imprisonment was imposed on every venereal case after discharge from the hospital, but as this led the men to conceal their affection from their medical officers and place themselves for treatment in the hands of empirics, the order imposing the punishment was revoked.